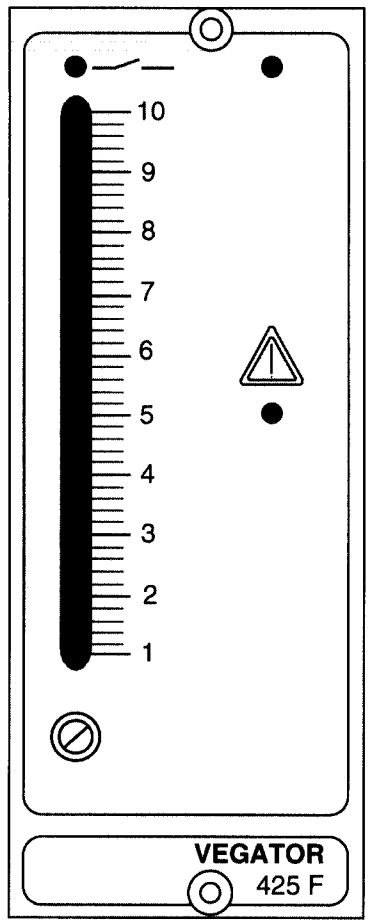
VEGATOR 425 F

VEGA

TIB • Technical Information • Operating Instructions

Signal conditioning instrument

300
400
500
800



Level switch with fault monitoring

- for connection of a capacitive electrode

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Application

The VEGATOR 425 F is a level switch and used for level detection.

In conjunction with electrodes virtually all products can be measured either liquids, powders, granules. The switching command can either be triggered by exceeding or falling below the level.

Typical applications are overfill protection and protection against dry running of pumps as well as in combination of two instruments - two-point control.

Configuration

The VEGATOR 425 F consists of:

- plastic housing with plug-in socket (series 400)
- electronics
- two relay outputs with floating spdt each
- floating transistor output (option)
- front plate with
  - mains control lamp
  - relay control lamp
  - signal lamp
  - potentiometer for switch point adjustment
  - linear scale

A measuring system consists of:

- VEGATOR 425 F
- capacitive electrode with oscillator

Function

Measuring electrode, product and container wall form an electrical capacitor. Due to the higher DK (dielectric constant) -value of the product to air, the capacitance increases with rising level.

The capacitance change is converted by the oscillator into a proportional current signal which is evaluated by VEGATOR 425 F.

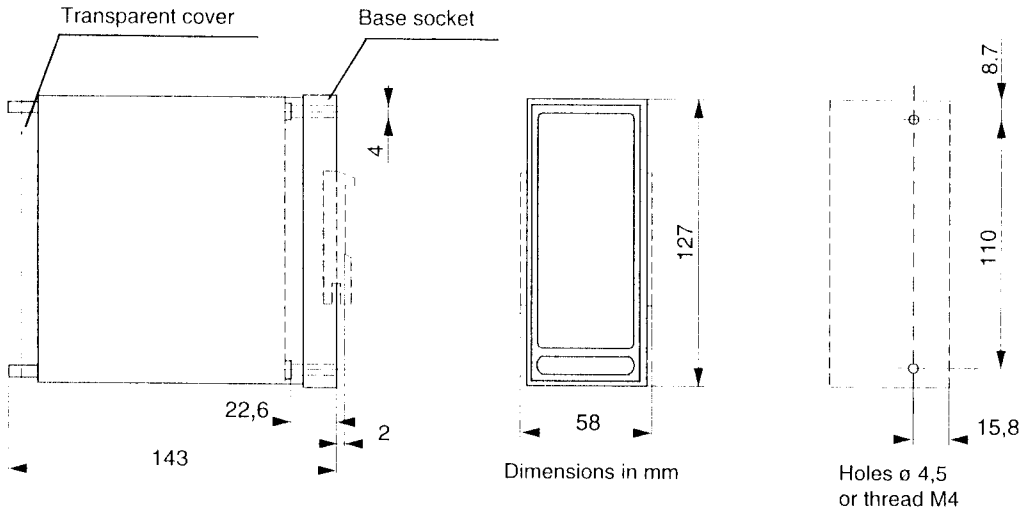
The integral fault monitoring detects:
- Short-circuit and line break in the connection cable to the transducer
- Current values on the connection cable < 1,1 mA or > 27 mA (e.g. by interferences of the electronics in the transducer)

If one of the above interferences is detected, the failure LED lights and the two output relays de-energize, i.e. terminals 10 and 11 or 16 and 17 are connected through relay (see electrical connection).

Technical data

		Value	Tolerance	Frequency
Power supply				
	standard	AC 230 V	+10 % -15 %	
	options	AC 110 V	+10 % -15 %	50 / 60 Hz
		130 V		
		240 V		
		AC 24 V	+10 % -15 %	50 / 60 Hz
		42 V		
		48 V		
		DC 9 ... 16 V		
		16 ... 60 V	———	———
Power consumption at U_N:		approx. 4,5 VA		
Switching sensitivity	type 115 A	approx. 0,5 pF		
with oscillator	type 117.11	approx. 0,7 pF		
Electrode connection	2-wire			
	resistance per conductor	max. 25 Ohm		
Relay output1				
(standard)	contact	1 spdt		
	function	level detection		
	mode	A / B		
	relay data:			
	contact material	AgCdO	AgCdO and Au plated	
	min. turn-on voltage	12 V	10 mV	
	min. switching current	0,4 A	10 µA	
	max. turn-on voltage	AC 250 V, DC 60 V		
	max. switching current	AC 2 A, DC 1 A		
	max. breaking capacity	125 VA, 60 W		
Floating transistor				
output 1 (option)		$U_B$max. = 28 V DC		
		$I_B$max. = 10 mA		
		U_{CE} min. < 0,8 V at I_B = 10 mA		
Relay output 2				
(standard)	contact	1 spdt		
	function	fail safe		
	relay data:			
	contact material	AgCdO	AgCdO and Au plated	
	min. turn-on voltage	12 V	10 mV	
	min. switching current	0,4 A	10 µA	
	max. turn-on voltage	AC 250 V, DC 60 V		
	max. switching current	AC 2 A, DC 1 A		
	max. breaking capacity	125 VA, 60 W		
Floating transistor				
output 2 (Option)		$U_B$max. = 28 V DC		
		$I_B$max. = 10 mA		
		U_{CE} min. < 0,8 V at I_B = 10 mA		
Ambient temperature on the housing		-20°C ... +50°C		
Storage and transport temperature		-20°C ... +70°C		
Housing	type	plastic ABS light grey		
	protection	IP 40		
	dimensions	W = 58 mm, D = 143 mm, H = 127 mm		
Terminal size in plug-in socket: for cross-section area of conductor		max. 1 x 1,5 mm^2		
Weight incl. plug-in socket		approx. 600 g		

Dimensional drawing



Mounting instructions

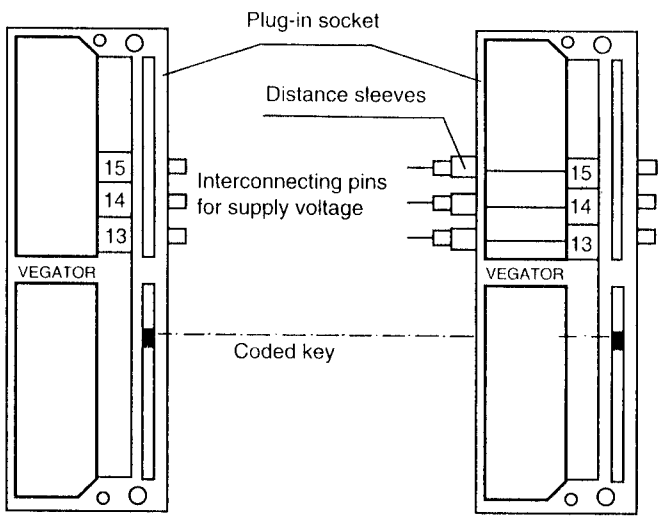
The base socket is equipped as a standard feature with
- filed terminals
- interconnection pins
- spacers for installation of several instruments in a row
- coded key

When installed in a row the interconnection pins provide power and the spacers the distance of 5 mm between the instruments.

For mounting on standard rail (TS 35 mm) an adapter is attached to the instrument. The two screws located on the front are used to fasten the instrument on the plug-in socket.

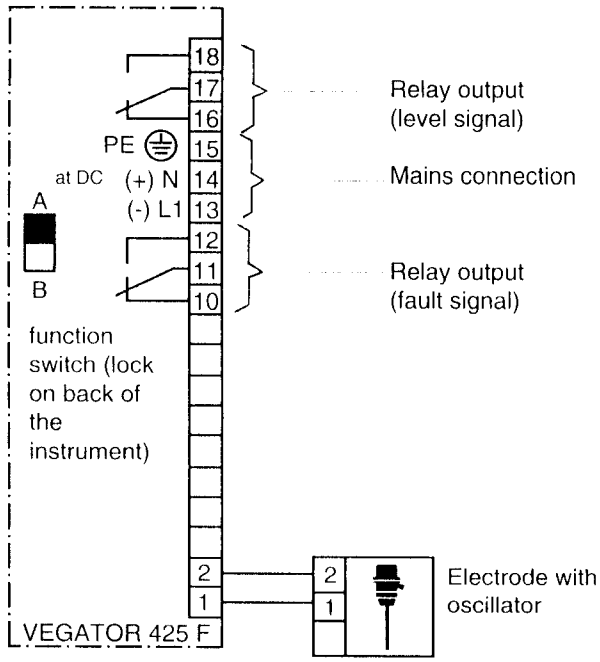
For single mounting remove the interconnecting pins and connect the supply voltage directly. The coded key prevents other series 400 instruments being fitted.

Remove all interconnecting pins on the first base socket.



Beware:
The pins on terminals 13, 14 and 15 carry supply voltage.

Electrical connection



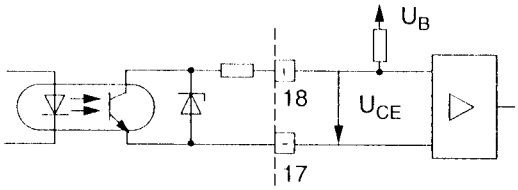
The electrical connections should be made on the mounting assembly in accordance with the diagram located on the back of the instrument.

Standard two-wire cable can be used as measuring line, electrode and signal conditioning instrument.

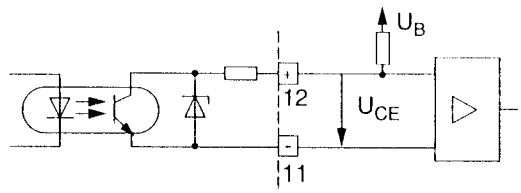
If electromagnetic interferences have to be expected, screened cable must be used.

Protective measures:
If there is a danger of voltage spikes overvoltage arresters are recommended. Note TIB "Overvoltage arresters" for connection!

Option: floating transistor output



Level signal
$U_B$max. = 28 V DC
$I_B$max. = 10 mA
U_{CE} min. < 0,8 V at I_B = 10 mA

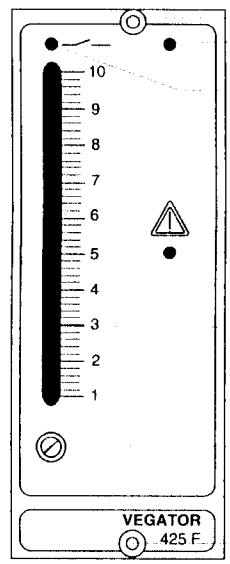


Fault signal
$U_B$max. = 28 V DC
$I_B$max. = 10 mA
U_{CE} min. < 0,8 V at I_B = 10 mA

Start-up

- Feed supply voltage (should comply with voltage stated on the connection diagram)
- Set A/B-switch to desired mode A or B

The function switch is used to realize the closed safety circuit.



Fixing screw
Mains control lamp
Relay control lamp
Signal lamp
Indication
Switch point adjuster
Fixing screw

Mode A
Transducer covered:
- relay de-energized
- relay control lamp lights
- terminals 16 - 17 are connected

This position is recommended e.g. as overfill protection.

Mode B
Transducer uncovered:
- relay de-energized
- relay control lamp lights
- terminals 16 - 17 are connected

This position is recommended e.g. as protection against dry running of pumps.

Note:
Adjust mode such that in case of mains failure no undesired switching functions are triggered.

Switching point adjustment

a) for horizontally mounted electrodes

Mode A
1. Lower product until electrode is uncovered.
2. Set switch point adjuster to "1". Relay control lamp lights.
3. Turn switch point adjuster slowly clockwise until relay control lamp extinguishes. Note determined scale value.
4. Cover electrode with product. Relay control lamp lights.
5. Turn switch point adjuster further slowly clockwise until relay control lamp extinguishes. Note determined value (if lamp does not extinguish, scale value "10" is valid).
6. Set switch point adjuster to mean value of the scale values of item 3. and 5.

Mode B
1. Lower product until electrode is uncovered.
2. Set switch point adjuster to "1". Relay control lamp does not light.
3. Turn switch point adjuster slowly clockwise until relay control lamp lights. Note determined scale value.
4. Cover electrode with product. Relay control lamp extinguishes.
5. Turn switch point adjuster further slowly clockwise until relay control lamp lights. Note determined value (if lamp does not light, scale value "10" is valid).
6. Set switch point adjuster to mean value of the scale values of item 3. and 5.

b) for vertically mounted electrodes

Mode A
1. Cover electrode up to the desired switch point.
2. Set switch point adjuster to "10". Relay control lamp does not light.
3. Turn switch point adjuster slowly anti-clockwise, until relay control lamp lights.

Mode B
1. Cover electrode up to the desired switch point.
2. Set switch point adjuster to "1". Relay control lamp does not light.
3. Turn switch point adjuster slowly clockwise, until relay control lamp lights.

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